



ExtraBees²

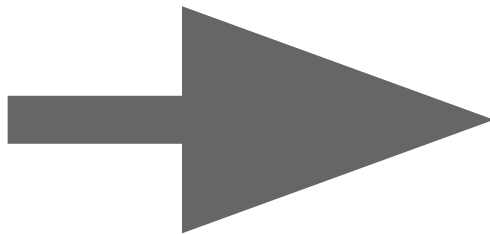
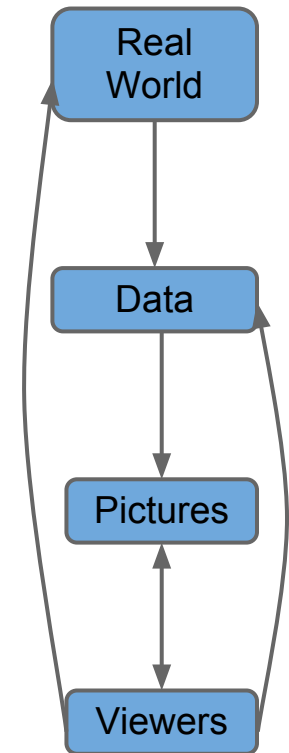
VAST 2013 Mini-Challenge 3



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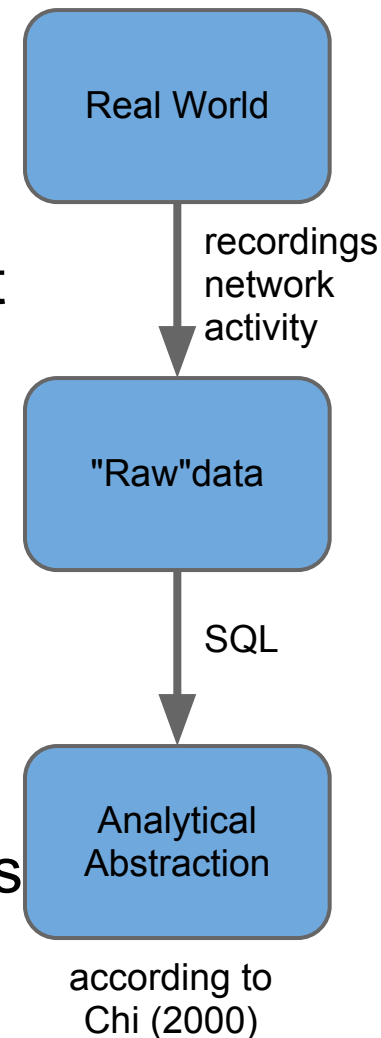
- Introduction/ Live Demo
- Internet/Server communication
 - Data and data model
 - Visualization transformation
 - Visual Information Seeking Mantra
 - Visualization: Network flow
- Intranet communication
 - Data preprocessing
 - Visualization: Bubble cloud

Visual Information Seeking Mantra:
***Overview first, zoom and filter,
then details-on-demand***
by Ben Shneiderman (1996)

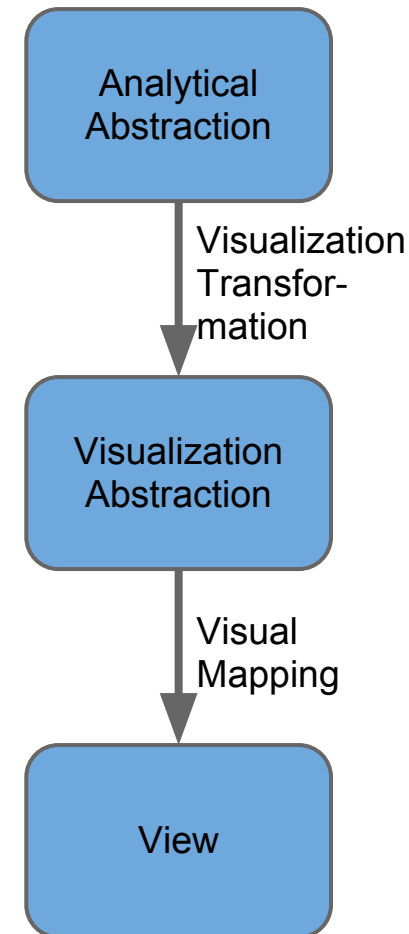


Primary Objective:
User (e.g. admin) should quickly
find, identify and analyse problems
in order to fix them.

- Network of company with three Sites
 - network traffic and health data.
- Data model: network topology
 - nodes: 3 enterprise sites and internet
 - edges: connection between sites & internet
 - Time-dependent network traffic
- Data model: time-dependent qual./ quan. health data per Server/ Site
- Integration via relational model
 - relational Databases (e.g. MySQL)
- Data Processing/ Transformation
 - filtering/ cleansing: e.g. splitting long entries
 - abstraction: e.g. use of fixed time intervals
 - extraction: traffic/ health per enterprise site

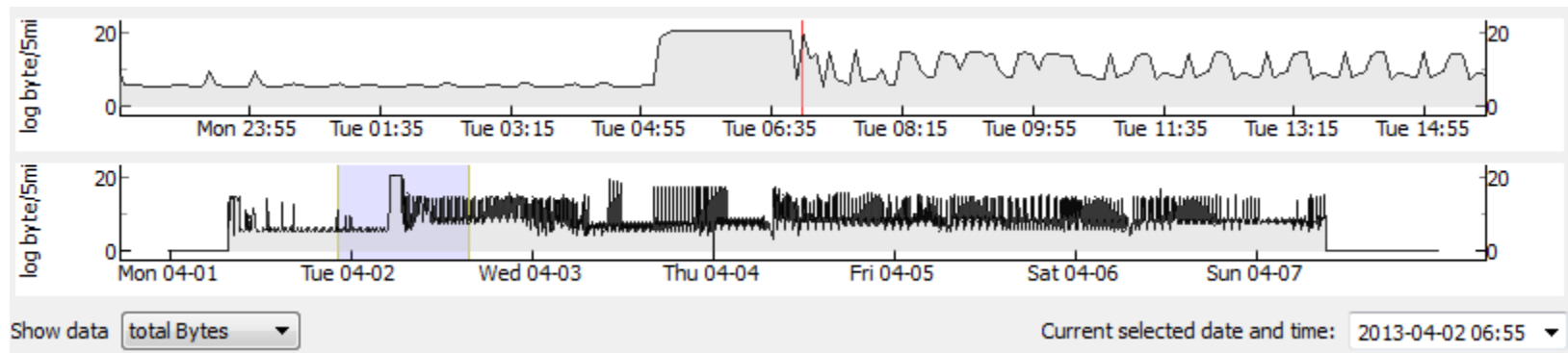


- Visualization Transformation:
 - Query database to generate time-dependent visualizable network status.
 - e.g. overall traffic load or no. errors/warnings/ connection timeouts
- Visual mapping:
 - mapping of extracted data to visualization
 - e.g. time-dependent traffic amount to color and width of edges



Visual Information Seeking Mantra:

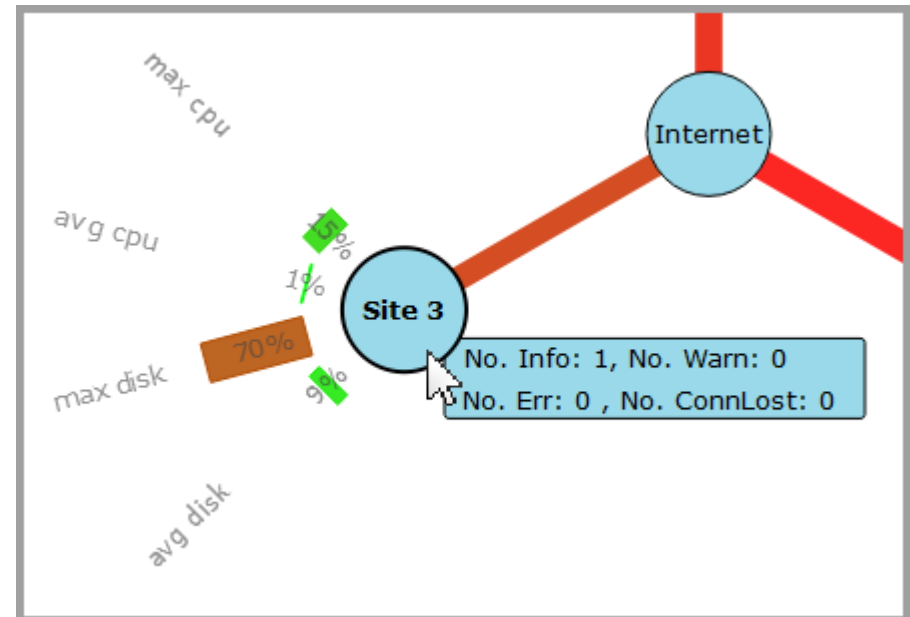
Overview, zoom, filter



- lower plot shows overview
- upper plot shows move- and scaleable region of the lower plot
- accurate time selection with date field and pop-calendar
- different data sets selectable with combo box

Visual Information Seeking Mantra: *details-on-demand*

- mouse-hover shows radial oriented bars with information about health values
- mouse-click on a site node locks the visibility of these health values in order to observe changes
- double-click switches to detailed site-view



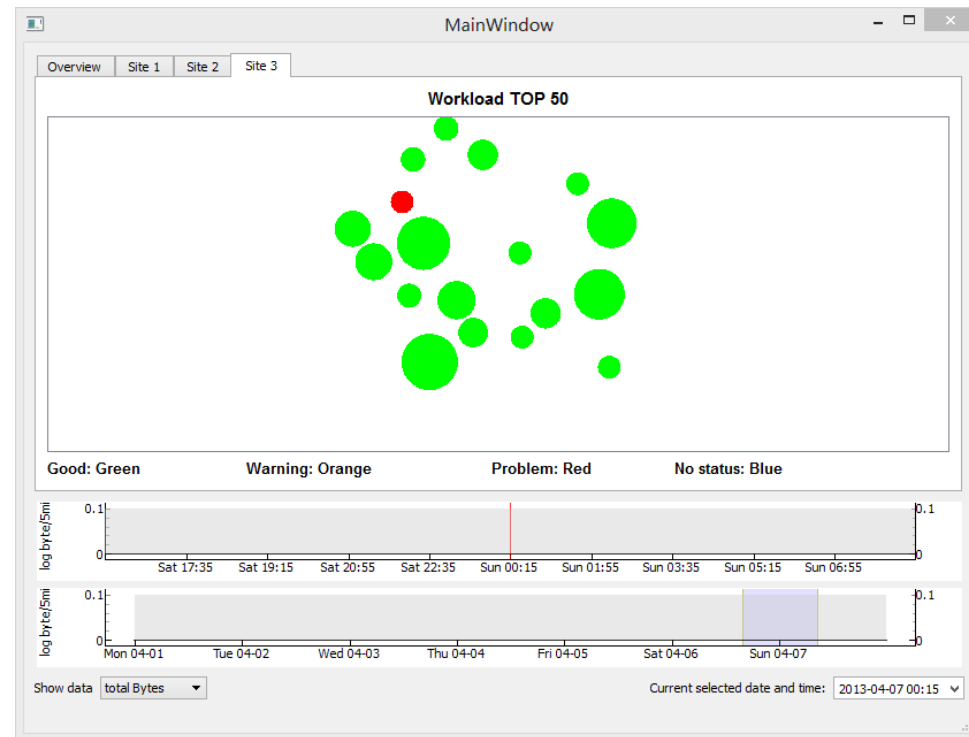


- Data preprocessing
- Bubble scene

mySQL is used for

- Reduce the amount of the dataset so the visualization can run in real time
- calculate the total workload of every workstation in the company in every 5 minutes interval
views were used for the calculations
- finding the status health value of workstations in every 5 minute interval

- Fetch and preprocess data from mysql
- Atomic Bubble
 - Mouse Hover Event
- Bubble Animation
 - Resize
 - Relocate
 - Color Change
- Bubble Scene
 - Initialize Scene
 - Keep Tight Algorithm
- Synchronize time stamp with overview tab



- Shneiderman B. (1996). The Eyes Have It: A Task by Data Type Taxonomy for Information Visualizations.
- Chi Ed. H. (2000). A Taxonomy of Visualization Techniques Using the Data State Reference Model.

- GUI and network flow visualization written in Python 2.7 using PyQt4
- Flexibility and Extensibility due to use of MySQL Server
 - different views on data
- PyQtGraph-library for real time data plots
 - quick zooming and region selection

